News release

Rivers of change

19 January 2005

New research by Met Office scientists shows that man-made greenhouse gases are probably causing increasing river flows into the Arctic Ocean, and this could be evidence of changing rainfall patterns on a global scale.

Dr Peili Wu and his colleagues from the Met Office's Hadley Centre for Climate Prediction and Research used a computer model of the climate to show that increases of Arctic river flows, observed over recent decades, can only be explained by man-made global warming. By analysing river-monitoring data from the six largest Eurasian rivers flowing into the Arctic Ocean, scientists have found a trend of increasing river output during the 20th century. A similar trend is found in the climate simulation for the same period by the Hadley Centre's coupled climate model, but only when the effects of man-made greenhouse gases are included.

Dr Wu said: "This is evidence that changes in the global water cycle, predicted to follow global warming, are already happening. Our model predicts that these changes will intensify in the coming decades, with implications for water supply and risks of flooding."

Water exchanges between the ocean, atmosphere and land are called the global hydrological cycle. As the earth's climate warms up, the rate of these exchanges is expected to increase. As part of this process, amplified high-latitude rain and snowfall will result in increased river run-offs. This could change the distribution of water on the earth's surface with important social and economical impacts. It could also have implications for the circulation of the Atlantic, which is important for European climate.

The research was funded by the UK Department for Environment, Food and Rural Affairs under its Climate Prediction Programme, and will be published on 21 January 2005 in the journal *Geophysical Research Letters*.

Notes to Editors:

The paper titled 'Human influences on increasing Arctic river discharges', by Peili Wu, Richard Wood and Peter Stott, will be published in *Geophysical Research Letters*, 21 January 2005 (ref: Geophys. Res. Lett., 32, L02703, doi:10.1029/2004GL 021570).

The rivers that have been analysed are the Yenisey, the Lena, the Ob', the Pechora, the Kolyma, and the Severnaya Dvina.

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